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GRADING FOR COPRA FOR TABLE USE AND FOR OIL MILLING

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Indian Standard

GRADING FOR COPRA FOR TABLE USE AND FOR OIL MILLING

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 16 June 1971, after the draft finalized by the Oils and Oilseeds Sectional Committee had been approved by the Chemical Division Council and the Agricultural and Food Products Division Council.

0.2 India ranks third among the coconut producing countries of the world. The chief coconut growing States in India are Kerala, Tamil Nadu, Mysore and Andhra Pradesh. The dried kernel of the coconut fruit is called copra. Copra is used for extraction of oil and for edible purpose.

0.3 The quality of coconut oil obtained from copra is covered by IS : 542-1968*.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the methods of grading and the requirements of copra for extraction of oil and for table use, along with methods of sampling and test.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given below and those given in IS : 3579-1966‡ shall apply.

2.1.1 *Ball Copra* — The kernel of coconut fruit, the kernel being intact and in the form of a ball.

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*Specification for coconut oil (*second revision*).

†Rules for rounding off numerical values (*revised*).

‡Methods of test for oilseeds.

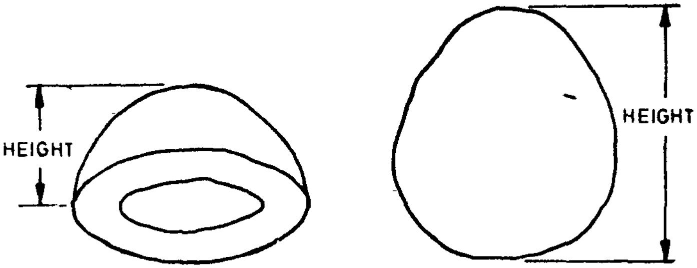
2.1.2 *Black Kernels* — These shall include all balls or cups in which more than 5 percent of the inner surface is dark brown to black in colour.

2.1.3 *Chips* — These shall include pieces of kernel which are smaller in size than the cup size, broken cups and balls, and which also carry the other defects stated under **2.1.2**, **2.1.9** and **2.1.10**.

2.1.4 *Cup Copra* — The kernel of coconut fruit which has been cut into approximately two equal pieces forming a cup shape.

2.1.5 *Diameter* — In the case of ball copra, this is the axis perpendicular to the height, and is the maximum girth. In case of cup copra, it is the maximum width on a circular rim.

2.1.6 *Height* — For cup copra, it is defined as the perpendicular distance from the circular rim to the top-most point on the semisphere of the cup. For ball copra it is defined as the maximum girth at the perpendicular axis; it shall be the diameter passing through the tip of the ball.



CUP COPRA BALL COPRA

Fig. 1 Measurement of Height

2.1.7 *Impurities* — Foreign bodies other than kernel or part thereof, which could consist of sand, mould, straw, shell and other foreign bodies.

2.1.8 *Kernel* — Soft body enclosed by the shell which carries the oil, sometimes termed as meat.

2.1.9 *Mouldy Kernels* — These shall include all balls or cups in which more than 5 percent of the inner surface is covered with mould.

2.1.10 *Wrinkled Kernels* — These shall include balls or cups that are shrunk out of normal shape, or are not fully matured or developed, or have a rubbery structure, and uneven surface. Such kernels are often discoloured.

3. TYPES AND GRADES

3.1 There shall be three types of copra, namely:

Type 1 — ball copra for table purpose,
Type 2 — cup copra for table purpose, and
Type 3 — milling copra for oil extraction only.

3.2 There shall be three grades of Type 1, namely, Grade 1, Grade 2 and Grade 3; two grades of Type 2, namely, Grade 1 and Grade 2; and three grades of Type 3, namely, Grade 1, Grade 2 and Grade 3.

4. REQUIREMENTS

4.1 The material shall be the kernels obtained from the fruits of *Cocos nucifera* Linn., fam. Palmae.

4.2 The material of all types and grades shall be in sound merchantable condition, well-dried and reasonably firm.

4.2.1 Copra of Type 3, Grade 1 may be sundried or dried by hot air driers. Copra of Type 3 of Grades 2 and 3 may be sundried or smoke dried.

4.2.2 The material of Type 1 and Type 2 shall be free from rancid taste and objectionable odour. It shall be sweet in tasta. The testa shall be whitish to dark brown in colour, and the meat shall be pearly white to ash white in colour.

4.2.3 The material of all types may also be fumigated by sulphur or other fumigants permissible under PFA Rules.

4.3 The material shall also comply with the requirements given in Tables 1, 2 and 3.

5. PACKING

5.1 The material shall be supplied packed in dry, sound and merchantable condition, in hessian bags or in heaps as agreed to between the purchaser and the supplier.

6. MARKING

6.1 Containers of Type 1 shall be boldly marked '*Ball Copra for Table Use*', of Type 2 '*Cup Copra for Table Use*', and of Type 3 '*Milling Copra for Oil Extraction*'.

6.2 Containers shall also be marked with the grade and weight of the material in the container; the year of the crop; the name of the supplier and trade-mark, if any.

TABLE 1 REQUIREMENTS FOR COPRA, TYPE 1 (BALL COPRA FOR TABLE USE)

(*Clause* 4.3)

SL No.	CHARACTERISTIC	REQUIREMENT FOR			METHOD OF TEST, REF TO CL NO. OF	
		Grade 1	Grade 2	Grade 3	Appendix A	IS : 3579-1966*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Diameter, mm, *Min*	85	75	60	A-1	—
ii)	Impurities, percent by weight, *Max*	0·2	0·2	0·2	A-2	—
iii)	Mouldy and black kernels, percent by count, *Max*	2	2	2	A-3.1	—
iv)	Wrinkled kernels, percent by count, *Max*	10	10	10		
v)	Chips, percent by weight, *Max*	1·0	1·0	1·0		
vi)	Moisture content, percent by weight, *Max*	7	7	7	—	5·1

*Methods of test for oilseeds.

TABLE 2 REQUIREMENTS FOR COPRA, TYPE 2 (CUP COPRA FOR TABLE USE)

(*Clause* 4.3)

SL No.	CHARACTERISTIC	REQUIREMENT FOR		METHOD OF TEST, REF TO CL NO. OF	
		Grade 1	Grade 2	Appendix A	IS : 3579-1966*
(1)	(2)	(3)	(4)	(5)	(6)
i)	Diameter, mm, *Min*	70	—	A-1	—
ii)	Impurities, percent by weight, *Max*	0·5	0·5	A-2	—
iii)	Mouldy and black kernels, percent by count, *Max*	2	2	A-3.1	—
iv)	Wrinkled kernels, percent by count, *Max*	10	10		
v)	Chips, percent by weight, *Max*	1	1		
vi)	Moisture content, percent by weight, *Max*	6	6	—	5.1
vii)	Acid value of extracted oil, *Max*	2	2	—	5.3

*Methods of test for oilseeds.

TABLE 3 REQUIREMENTS FOR COPRA, TYPE 3 (MILLING COPRA FOR OIL EXTRACTION)

(*Clause* 4.3)

Sl No.	Characteristic	Requirement for			Method of Test, Ref to Cl No. of	
		Grade 1	Grade 2	Grade 3	Appendix A	IS : 3579-1966*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Impurities, percent by weight, *Max*	0·5	1	2	A-2	—
ii)	Mouldy cups, percent by count, *Max*	4	8	10	A-3.2	—
iii)	Black cups, percent by count, *Max*	5	10	15		
iv)	Wrinkled cups, percent by count, *Max*	5	10	15		
v)	Chips, percent by weight, *Max*	5	10	15		
vi)	Moisture content, percent by weight, *Max*	6	6	6	—	5.1
vii)	Oil content (on moisturefree basis), percent by weight, *Min*	70	68	66	—	5.2
viii)	Acid value of extracted oil, *Max*	2	4	10	—	5.3

*Methods of test for oilseeds.

7. SAMPLING

7.1 Representative samples of the material shall be drawn as prescribed in Appendix B.

8. TESTS

8.1 Tests shall be carried out as prescribed in Appendix A and in IS : 3579-1966*.

8.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1960†) shall be used in tests.

Note — ‘ Pure chemicals ’ shall mean chemicals that do not contain impurities which affect the results of analysis.

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*Methods of test for oilseeds.

†Specification for water, distilled quality (*revised*).

APPENDIX A

(*Tables* 1, 2 *and* 3, and *Clause* 8.1)

METHODS OF TEST FOR COPRA

A-1. DETERMINATION OF DIAMETER

A-1.1 Procedure

A-1.1.1 *For Cup Copra* — Measure by means of vernier calipers the maximum width between opposite sides on the circular rim at four different places, as shown in Fig. 2. Calculate the mean of the four values and take it as the diameter of the cup.

A-1.1.2 *For Ball Copra* — Measure by means of vernier calipers the maximum girth at the axis perpendicular to the height, as shown in Fig. 2.

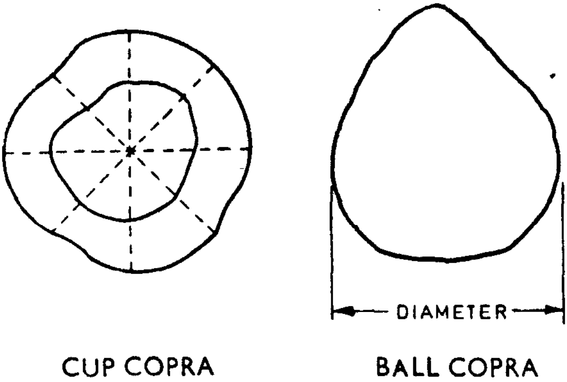

FIG. 2 MEASUREMENT OF DIAMETER

A-2. DETERMINATION OF IMPURITIES

A-2.1 Procedure — Weigh the kernels constituting the test sample. Brush them thoroughly so as to remove all adhering impurities, both from internal and external surfaces of the kernel. Examine the sample left for other impurities like shell, straw and other extraneous matter. Separate these by hand picking or with the help of a forceps. Collect the impurities and extraneous matters. Weigh and report them as impurities, percent by weight, to the nearest 0·01 percent.

A-3. DETERMINATION OF MOULDY AND BLACK KERNELS, WRINKLED KERNELS AND CHIPS

A-3.1 For Type 1 (Ball Copra for Table Use) and Type 2 (Cup Copra for Table Use)

A-3.1.1 *Procedure* — Separate the chips in the bulk sample, weigh them and report as percentage by weight to the nearest 0·01 percent. Next, separate the wrinkled balls and calculate their number as percent of the balls constituting the bulk sample. Then cut open the rest of the balls and separate the mouldy and black balls. Calculate their number too as percent of the balls constituting the bulk sample.

A-3.2 For Type 3 (Milling Copra for Oil Extraction)

A-3.2.1 Procedure — Follow the same procedure and sequence of operations as in **A-3.1.1** except that the number of mouldy kernels and black kernels shall be counted and reported separately.

APPENDIX B

(*Clause* 7.1)

METHODS OF SAMPLING FOR COPRA

B-1. SCALE OF SAMPLING

B-1.1 Consignment — It shall consist of the entire quantity of copra received at one time under a particular contract. It may be in a packaged form or in a heap.

B-1.2 Lot — A lot shall denote a quantity of copra in a consignment belonging to the same type and grade. Each lot shall be kept separate either in a stack or a heap for sampling.

B-1.3 Preparation of Bulk Sample from Packages — Take out from the number of bags in each lot, a number equal to the integral part of the square root of the total number of the bags, with a minimum of two. These bags shall form the bulk sample.

Example:

If there are 38 bags (square root 6·16) take 6 bags.

B-1.3.1 For selection of bags at random, a random number table shall be used. In the absence of such a table, the first bag in the stack of bags shall be marked and thereafter every *n*th bag shall be taken out (*n* being the whole number derived by dividing the number of bags in the lot by number of bags to be taken out).

B-1.4 Preparation of Bulk Sample from Heaps — For sampling from a heap, a number of samples shall be drawn by wooden or metal shovel from different sides and depths in the heap. The bulk sample from the heap so prepared shall be approximately 2 percent by weight of the quantity in each lot with a minimum of approximately 50 kg.

B-1.5 Preparation of Test Sample — A test sample of approximately 5 to 7 kg or 100 cups shall be drawn at random either by emptying the bags selected as laid down in **B-1.3.1** or from the bulk sample obtained as given in **B-1.4**. A cluster of 7 to 10 cups shall be taken from different spots in the bulk sample for obtaining the test sample.

B-1.6 The test sample shall be the sample used for physical tests.

B-1.7 After determination of physical tests, all the kernels of the test sample shall be vertically cut and a quarter taken from each kernel to prepare the test sample for chemical tests.

B-1.8 The pieces of kernel shall be grated by a hand-operated shredding contrivance, or made into fine pieces using a sharp knife. This material shall be thoroughly mixed. Required quantity of sample shall be used for chemical tests.

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